

On the Framework of Contemporary Intelligent Mathematics Underpinning Intelligent Science, Autonomous AI, and Cognitive Computers

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Abstract : The fundamental demand in contemporary intelligent science towards Autonomous AI (AI*) is the creation of unprecedented formal means of Intelligent Mathematics (IM). It is discovered that natural intelligence is inductively created rather than exhaustively trained. Therefore, IM is a family of algebraic and denotational mathematics encompassing Inference Algebra, Real-Time Process Algebra, Concept Algebra, Semantic Algebra, Visual Frame Algebra, etc., developed in our labs. IM plays indispensable roles in training-free AI* theories and systems beyond traditional empirical data-driven technologies. A set of applications of IM-driven AI* systems will be demonstrated in contemporary intelligence science, AI*, and cognitive computers.

Keywords : intelligence mathematics, foundations of intelligent science, autonomous AI, cognitive computers, inference algebra, real-time process algebra, concept algebra, semantic algebra, applications

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